

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
10 August 2000 (10.08.2000)

PCT

(10) International Publication Number  
WO 00/46358 A3

(51) International Patent Classification<sup>7</sup>: C12N 15/29,  
C07K 14/415, C12N 15/63, 15/82, C07K 16/16, A01H  
1/00

Crescent, St. Ives, Huntingdon PE17 4TA (GB), DEAN,  
Caroline [GB/GB]; 19 Waverley Road, Norwich, Norfolk  
NR4 6SG (GB).

(21) International Application Number: PCT/GB00/00197

(74) Agents: KREMER, Simon, M. et al.; Mewburn Ellis,  
York House, 23 Kingsway, London WC2B 6HP (GB).

(22) International Filing Date: 25 January 2000 (25.01.2000)

(81) Designated States (national): AE, AL, AM, AT, AU, AZ,  
BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK,  
DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,  
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,  
LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,  
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,  
UG, US, UZ, VN, YU, ZA, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
9902660.1 5 February 1999 (05.02.1999) GB  
05 Aug 01/30 m/s

(71) Applicant (for all designated States except US): PLANT  
BIOSCIENCE LIMITED [GB/GB]; Norwich Research  
Park, Colney Lane, Norwich, Norfolk NR4 7UH (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): JOHANSON, Ur-  
ban [SE/SE]; Department of Plant Biochemistry, P.O. Box  
117, S-221 00 Lund (SE); WEST, Joanne [GB/GB]; The

(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent  
(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent  
(AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,  
MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:  
— With international search report.

[Continued on next page]

(54) Title: ARABIDOPSIS THALIANA DERIVED FRIGIDA GENE CONFERRING LATE FLOWERING

1 MSNYPPTVAA QPTTTANPLL QRHQSEQRRL ELPKIVETES TSMDITIGQS  
51 KQPQPLKSID ELAAFSVAVE TFKRQFDDLQ KHIESIENAI DSKLESNGVV  
101 LAARNNNNFHQ PMILSPPRNNV SVETTVTVSQ PSQEIVPETS NKPEGGRMCE  
151 LMCSKGRLKY IYANISDQAK LMEEIPSALK LAKEPAKFVL DCIGKFYLQG  
201 RRAFTKESPM SSARQVSLLI LESFLLMPDR GKGKVKIESW IKDEAETAAV  
251 AWRKRLMTEG GLAAAEEKMDA RGLLLLVACF GVPNSNFRSTD LLDLIRMSGS  
301 NEIAGALKRS QFLVPMVSGI VESSIKRGMH IEALEMVYTF GMEDKPSAAL  
351 VLTSFLKMSK ESFPERAKRKA QSPLAPEKAA TKQLAVLSSV MQCMETHKLD  
401 PAKELPGWQI KEQIVSLEKD TLQLDKEMEE KARSLSLMEE AALAKRMYNO  
451 QIKRPRLSPM EMPPVTSSSY SPIYRDRSFP SQRDDDQDEI SALVSSYLG  
501 STSFPHRSRR SPEYMVPLPH GGLGRSVYAY EHLAPNSYSP GHGHRLHRQY  
551 SPSSLVHGQRH PLQYSPPPIHG QQQLPYGIQR VYRHSPSEER YLGLSNQRSP  
601 RSNSSLDPK

(57) Abstract: Disclosed are isolated nucleic acids obtainable from the FRI locus of plants which encode polypeptides capable of specifically altering, particularly delaying, the flowering time of a plant into which the nucleic acid is introduced. One preferred embodiment is the FRI nucleotide sequence which encodes the polypeptide of Fig 6 (see the sequence of Fig 5, particularly bases 362-2188 thereof) or sequences degeneratively equivalent to these. Also provided are variant sequences (e.g. alleles, orthologues, derivatives) and complementary sequences, plus vectors, host cells, plants and associated processes of production and methods of use e.g. for influencing or affecting flowering time in a plant by expression or suppression of FRI or variant sequences.

WO 00/46358 A3